

For Heating, Ventilating and Air Conditioning



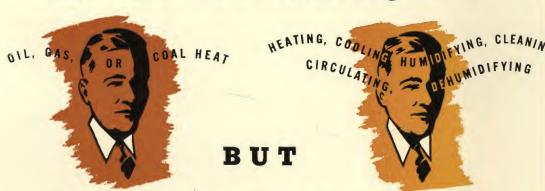
Of course you are planning on Automatic Heating or Air Conditioning in some form or other, but have you given Automatic Controls the consideration they deserve?

- On the following pages are described the functions of Automatic Controls as applied to various types of Automatic Heating and Air Conditioning equipment. It has been truthfully said that "it is the Automatic Controls that make automatic heating automatic." And it is also true that no automatic installation, whether it be fired by oil, gas or coal, can perform better than the controls which govern its operation. After all, when you buy automatic heating, you are primarily interested in comfort and economy of operation. It's your automatic controls that hold the temperature and humidity in your home where you want it, and it is the controls that keep your burner operating with maximum efficiency.
- Minneapolis-Honeywell has nothing to sell directly to you, although it is the oldest and largest manufacturer

of control equipment in the world. Minneapolis-Honeywell controls are sold to manufacturers and dealers, and are installed with your Automatic Heating and Air Conditioning equipment.

• Consequently, we urge you to give proper consideration to the controls that will be furnished with the burner you select. . . . Insist upon M-H controls. They are standard on most burners, and can be had for all types of automatic heating, ventilating and air conditioning installations.

Install Automatic Heating and Air Conditioning



don't overlook the controls that make it automatic

H O N E Y W E L L



M-H BASIC CONTROLS

A MINIMUM OF AUTOMATIC CONTROL IS OFTEN ALL THAT IS SUPPLIED WITH THE BURNER...

• Automatic heating can be accomplished only if the burner, regardless of the type of fuel used, is equipped with automatic controls. These controls should consist of a thermostat to stabilize room temperature, a limit control to restrict the temperature of the furnace or boiler at a given point, a primary control to operate the burner in the case of oil or coal firing, and a valve in the case of gas heating. Such controls, of course, are necessary for the operation of your burner and are required by most local ordinances. They represent the minimum equipment with which Automatic Heating can be properly installed.

Even if this minimum equipment is all that you require, insist upon Minneapolis-Honeywell Controls, for they insure the best performance from your system and make sure that proper controls will be available for future equipment if you make additions or changes later. Minneapolis-Honeywell Automatic Controls are accepted as standard by the majority of manufacturers, and are available for all types of oil, gas, or coal burners, as well as kindred equipment. The Minneapolis-Honeywell line is complete in itself.

In order to make list prices of Automatic Heating units attractive, most dealers supply only standard equipment, which includes a plain type thermostat such as the Acratherm. There are, however, several additional or optional controls you should know about. You probably will want more than the very minimum of controls, especially in view of the fact that complete automatic control will give much more comfort, convenience and economy, and will actually cost but little more.



THE NEW CHRONOTHERM

EVERY AUTOMATIC HEATING PLANT MUST HAVE A ROOM THERMOSTAT, BUT...

- Only the M-H Thermostats will give you the perfection of temperature control you should have. These thermostats will probably cost you little, if any, more than a conventional type, yet they have many distinct and revolutionary advantages. Because the greater majority of burners are supplied with M-H Controls, the chances are your dealer will figure the plain type M-H "heat accelerated" thermostat in his original price. If some other plain type thermostat is substituted, the following facts will show you why it is wise to insist upon one of the Minneapolis-Honeywell Thermostats employing the principle of "heat acceleration."
- M-H Thermostats do what other thermostats strive to do; namely to provide stabilized heat. By means of the "accelerator", M-H Thermostats actually sense temperature changes before they are noticeable and speed up the heating system to meet them. They literally iron out temperature fluctuations in any modern heating system by automatically adjusting the length and number of burner operations to supply heat in response to the changes in outside weather. Short frequent burner operations in cold weather, and less frequent operations in mild weather, produce stabilized heat. No thermostat without the M-H principle of "Heat Acceleration" can do this.

THE NEW "CHRONOTHERM"

• The new M-H Chronotherm is the finest thermostat in the Minneapolis-Honeywell line, and actually is the ace of all thermostats. In addition to providing Stabilized Heat, it is equipped with an accurate and dependable, self-starting, electric clock, of the latest design. It automatically lowers temperature at night and raises the temperature in the morning at any given time before you arise. The Chronotherm is completely automatic. Its added cost is more than compensated for, by the comfort and economy it provides. In fact, you can't afford to be without the Chronotherm in your home.



THE PLAIN ACRATHERM and THE DA-NITE ACRATHERM

LOWERED NIGHT TEMPERATURE SAVES FUEL, YET ADDS COMFORT

• It is an established fact that reducing temperature at night and during periods when heat is not needed, can save you from 10 to 30% in fuel costs. To make this lowering of temperature practical, Minneapolis-Honeywell originated and pioneered "Clock Control". It has been proved through exhaustive tests that fuel is saved at the rate of 3.2% per degree of lowered temperature . . . in other words — if your temperature control point is lowered 10° during the night or when temperature at the higher point is not needed, 32% of the fuel normally consumed during those hours will be saved. Lowered night temperature can be automatically accomplished for a small additional first cost, but it is well worth the investment. The new M-H Chronotherm or the Da-Nite Acratherm provides "stabilized heat" as does the plain type Acratherm, but offers the additional advantages of lowered night temperature.

THE "DA-NITE ACRATHERM"

● The Da-Nite Acratherm provides the same exclusive control qualities as the plain Acratherm and the Chronotherm, but requires manual attention to provide night temperature shut-down. It is a less expensive way to accomplish lowered night temperature. At night when you retire or at any time when heat is not needed — if you are away for the day — a twist of the fingers reduces the temperature to a fuel saving level for the length of time you designate. When this period has elapsed, the Da-Nite Acratherm automatically restores the comfortable temperature you desire. This means that your home is always comfortable in the morning when you arise, yet you have saved fuel at the rate of 3.2% for every degree you have lowered the temperature.

THE "ACRATHERM"

• The Acratherm is a new type of thermostat recently developed by M-H engineers, and is the Minneapolis-Honeywell version of a plain type thermostat. The Acratherm eliminates the condition known to heating engineers as "Cold 70" which is due to air stratification as a result of intermittent firing, because it provides short frequent burner operations which keeps the air within the room circulating and temperatures even at all times. When you install Automatic Heating insist that it is at least Acratherm controlled, as the Acratherm is probably Minneapolis-Honeywell's greatest single contribution to the automatic heating industry.

MINNEAPOLIS

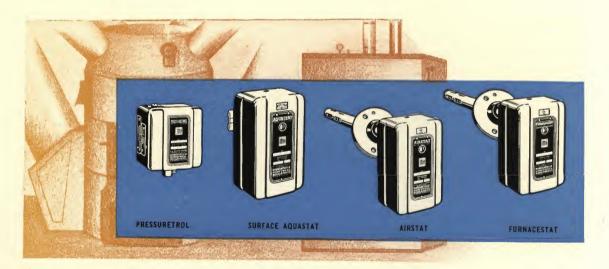
LIMIT CONTROLS SAFEGUARD YOUR HEATING PLANT

● Limit controls safeguard the furnace or boiler against excessive temperatures or pressures. It is not uncommon for doors or windows to be left open, causing the thermostat to continually call for heat with the result that the heating plant itself becomes overheated. Limit controls are required by law in a great many localities and their cost is almost negligible. Insist upon M-H Limit Controls, for your own protection.

The Airstat, for warm air systems, automatically shuts off the burner in the event the temperature of the furnace becomes too high. The Aquastat performs the same function for hot water systems, while the Pressuretrol and Vaporstat provide this protection for vapor and steam systems.

WARM AIR BLOWER SYSTEMS REQUIRE AUTOMATIC CONTROL

• The blower or booster fan increases circulation and also speeds up the delivery of heat in warm air heating plants. Minneapolis-Honeywell Automatic Controls operate the blower or fan in any sequence desired. During summer months the blower can be used to circulate air through the basement, providing a cooling effect. Used at night, the fan or blower empties the house of warm air and draws in cool fresh air from the outside. All of this can be accomplished automatically by the installation of Minneapolis-Honeywell Controls. Ask your heating contractor about these added features.



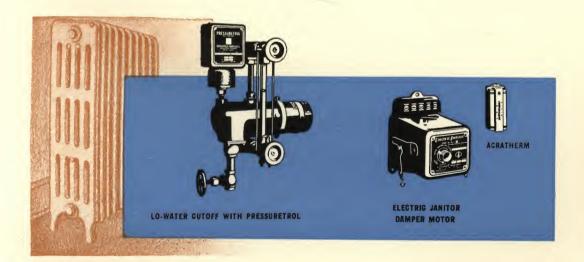
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LOW-WATER CUTOFF SAFEGUARDS YOUR STEAM OR VAPOR SYSTEM

• Considerable damage can result to a steam or vapor system in the event thewater level in the boiler becomes too low, either through neglect or because of an unnoticed leak. The M-H Low-Water Cutoff automatically turns off the burner which remains off until a safe water level in the boiler is restored. No steam or vapor heated home should be without this protection, for lack of it may involve damage to property, or injury to the occupants. An M-H Low-Water Cutoff can easily be added to any installation at a very nominal cost.

HAND FIRED HEATING PLANTS REQUIRE AUTOMATIC CONTROL

● The simplest form of control is the automatic damper regulator for a manually fired heating plant. The M-H Electric Janitor consists of a room thermostat and an electric motor which opens and closes the furnace or boiler drafts in accordance with the room temperature requirements. A limit control should always be used. This not only provides healthful and comfortable temperatures but eliminates fuel waste due to overheating, which often occurs when the heating plant is manually regulated.



MINNEAPOLIS

FORCED HOT WATER CIRCULATION PROVIDES QUICK, EVEN HEAT

● Forced circulation of hot water in hot water systems is the modern and efficient way to insure quick, even heat. Without proper circulation, remote radiators naturally do not deliver heat as quickly as those nearer the heating system. The M-H electrically operated Water Circulator quickly forces hot water throughout the system and provides even distribution of heat to all parts of the home. Because circulation is much more rapid with the circulator than with natural or gravity circulation, the temperature of the boiler water may be maintained at a lower level. This saving, as well as the saving on your heating installation, due to the use of smaller size piping throughout, should more than pay for the cost of the precision built M-H Packless Seal Circulator, which is leak-proof and extremely quiet.

DOMESTIC HOT WATER FROM YOUR AUTOMATIC BURNER

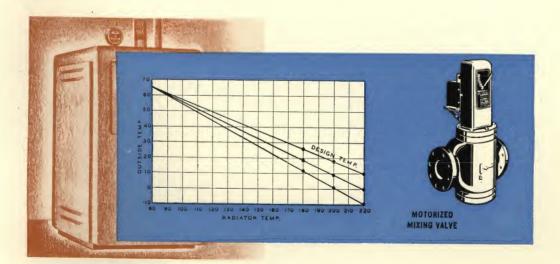
● The Automatic Burner used to heat your home can also furnish a plentiful supply of low cost hot water during the summer as well as winter. When heat is not needed to maintain comfortable temperatures throughout the house, the radiator lines are automatically shut off and heat is transmitted to an indirect water heater. In a steam system, only an indirect water heater and a low limit control (Aquastat) are required. With a hot water heating system, the indirect heater is used, as well as the low limit Aquastat — and in addition a water circulator, discussed above, and flow valves are used to prevent heat travel to the rooms during the summer.



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AUTOMATIC MODULATION GIVES TEMPERED HOT WATER HEAT

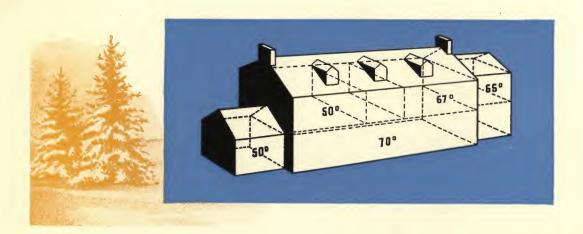
- The home owner who is looking for perfect comfort and satisfaction from a hot water heating plant will install the M-H Tempered Water Control System. This offers the ultimate in control for hot water heating. Nearly all conventional control systems for hot water heating plants provide on-off operation with fluctuating radiator temperatures. The M-H Tempered Control System eliminates this condition by the co-ordination of a modulating thermostat and a motorized mixing valve which constantly maintain the temperature of the radiators at the desired level. This is accomplished by diverting varying amounts of the cool return water around the boiler and mixing it with hot boiler water in proportions depending upon the heating requirements. Radiator temperatures are thus automatically adjusted for changing heating requirements and a constant radiator temperature for any given condition results. A powerful M-H Packless Seal Circulator assures positive circulation to every radiator and is a part of the complete system.
- Based upon different heating plant "design temperatures" (maximum demand conditions) the chart below indicates required radiator temperature to meet various outside weather conditions.



ZONE CONTROL PROVIDES GREATER COMFORT AND ECONOMY

• If you are building a large home, with servant quarters, guest rooms, garage, and other sections which do not constantly require the same temperature as the living quarters, or a home in which certain sections are differently affected by their exposure to the sun and wind, consideration of automatic control of the individual zones is highly important. The living rooms of your home should be kept at 70 or 72 degrees, while the temperature in the garage need not be more than just above freezing. Servants' quarters and guest rooms should be kept cool during the hours when they are not being used.

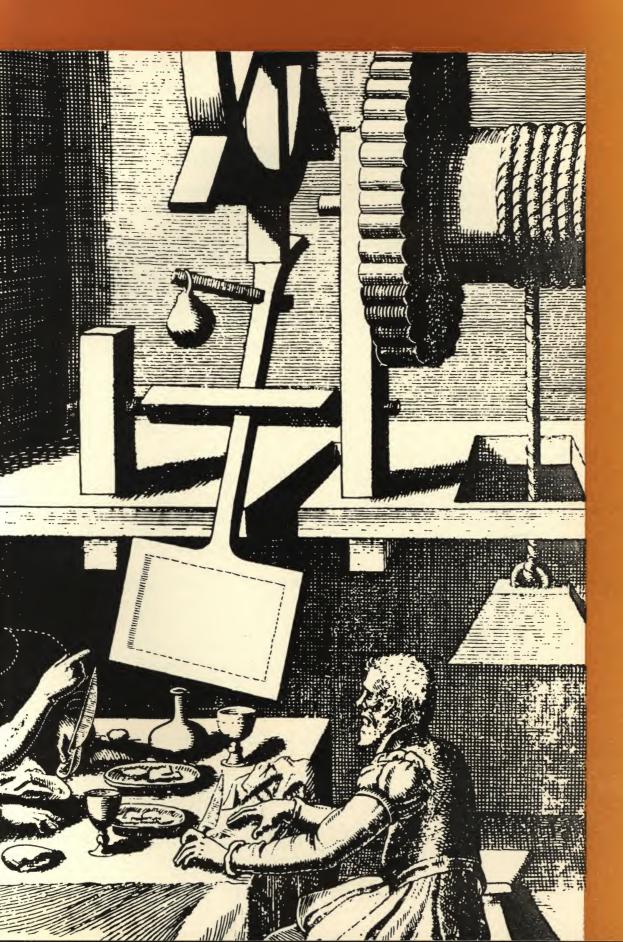
The effects of the sun and wind also must be taken into consideration. Rooms most exposed to wind must be supplied with more heat, while rooms which receive the benefit of solar radiation should be given less heat if uniform temperatures are to be maintained. To accomplish such results, the heating system should be divided into sections and controlled under a system known as Zone Control, which takes all heating factors into account and distributes heat accordingly. The economies that are effected will more than pay the cost of a Zone Control System, in a comparatively short time.



MINNEAPOLIS - HONEYWELL

AIR CONDITIONING IS NOT NEW

Early device to ventilate a room by a mechanically operated fan . . . Engraving after Boeckler, 1659



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TRUE AIR CONDITIONING INCLUDES SIX DEFINITE FUNCTIONS

- There are six functioning factors of an Air Conditioning system, namely: Heating, Cooling, Humidifying, Dehumidifying, Circulating and Cleaning.
- 1 Year 'round functions consist of circulating and cleaning the air.
- 2 Winter functions include heating and humidifying.
- 3 Summer functions are cooling and dehumidifying.

AUTOMATIC CONTROL

• Whether you install only Automatic Heating or add to it one or more of the other functions of Air Conditioning, the importance of the Automatic Controls cannot be too strongly emphasized. With adequate Automatic Control, the system, large or small, can be a comfort and joy; without adequate Automatic Control the system will likely be an annoyance and worry.

In general, Automatic Control in an Air Conditioning system does the following:

- 1 ELIMINATES HUMAN ERROR: Automatic Control provides adequate, accurate, and dependable regulation of the several factors and the various mechanical units which produce Air Conditioning. Controls will react to temperature and humidity changes long before the human body is aware of a change.
- 2 REDUCES COST OF OPERATION: When Air Conditioning is Automatically Controlled there is no waste of fuel or power. Overheating in winter and under-cooling in summer are avoided.
- 3 PROVIDES SAFETY: The steam or water pressure in a heating boiler, or the temperature of a warm air furnace must be controlled to safeguard the heating plant. The amount of moisture in the air must be governed to prevent damage. Dependable safeguard can be provided only by automatic safety controls which are a part of every Minneapolis-Honeywell Control System.

There is a Minneapolis-Honeywell Automatic Control for every Air Conditioning function, and for every type of equipment selected. Automatic Control is just as important as the Air Conditioning equipment itself, for without control, a system cannot function as efficiently, as economically, or as conveniently as it should.

H O N E Y W E L L

PLAN AIR CONDITIONING STEP BY STEP

• In all homes there are often several ways of accomplishing the same final results from Air Conditioning. But whether you plan to make the complete installation when you build or to provide Air Conditioning step by step, it is necessary that definite plans be made at the outset. Too much stress therefore cannot be placed on the value of employing a competent Architect or Engineer who can properly plan your entire system. Provision must be made for ducts to circulate conditioned air; the plant itself must be properly located, and many other elements must be taken into consideration that require the services of an Architect or Engineer.

The selection of the proper basic control system is likewise of utmost importance. It is necessary that the control system be such, that whether it is installed at one time, or step by step, it shall be completely coordinated and will function as a unit. Minneapolis-Honeywell is the only manufacturer offering a complete line—the right control for every application. When you start with Minneapolis-Honeywell Controls you have complete assurance that other necessary controls can be added from time to time, so that as you install additional Air Conditioning equipment, the entire control system will work together in perfect harmony.

The construction of your home will play an important part in the operating cost of an Air Conditioning System. Insulation, doors and windows, shades and awnings will make a tremendous difference in the cost of both winter and summer conditioning.

OPTIONAL AIR CONDITIONING EQUIPMENT

• When artificial cooling is not possible or not deemed necessary, considerable benefit can be derived through use of an attic fan. In the evening when outside temperatures fall, the attic fan expels the warm air from the house and fresh, cool air is drawn in through doors or windows left open on the ground floor.

This naturally has a distinct cooling effect, as it not only causes circulation but supplants warm air with the cooler outside air.

Automatic Control can operate an attic fan in several different ways. An M-H Time-O-Stat can automatically start the fan at a given hour and turn it off at any given time, or it can start the fan only when the temperature is above a given point in the home.





CHRONOTHERM-The world's finest thermo-stat. It is fully automatic, has a self-starting electric numeral clock movement and offers all theadvantagesoflowered night temperature without manual attention throughout the entire heating season. Stabil-ized Heat is assured through the exclusive M-H principle of "Heat Acceleration".



DA-NITE ACRATHERM This thermostat, like the Chronotherm, provides lowered night temperature but requires a manual setback each night before you retire. Day time temperature is then automatically restored at any time you desire. Stabilized Heat is maintained through its "accelerator" . . . an exclusive M-H feature.



THE ACRATHERM-This is the M-H plain type thermostat. It has "Heat Acceleration" and will definitely maintain stabilized temperature throughout your home, regardless of outside weather conditions. If you do not decide to have the Chronotherm or the Da-Nite Acratherm, insist upon having the M-H Acratherm.



PROTECTORELAY-This is the recommended operating control for your automatic oil burner. It is actuated by the M-H room thermostat you select. M-H Protectorelays provide auto-matic shut down in the event of combustion failure, and provide a means

for automatic recycling.



GAS VALVE-This is the silent motorized M-H automatic gas valve for your automatic gas burner. Like the Protectorelay for the oil burner, this motorized gas valve takes its control from the M-H "heat accelerated" room thermostat which you specify. Solenoid Gas Valves are also available. also available.



TIMERELAY-Automatic coal burners are operated by either the M-H Timerelay or Stokerswitch which main-tains the fire in mild weather and controls your burner with a maximum of economy. These instruments are controlled by the M-H room thermostat you select.



AIRSTAT - A safety or limit control which protects your furnace from over-heating, by automatically shutting off your burner before the bonnet or stack temperature in your warm air heating plant becomes excessive, thereby offering complete safety of operation.

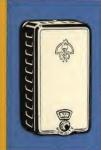


AQUASTAT - Should a window or door be left open, your thermostat may call for heat continually. Under these conditions an overheated boiler will undoubtedly result. The Aquastat measures boiler temperature and provides automatic shut down whenever safe limits are exceeded.



PRESSURETROL-This safety or limit control is a necessary part o every steam, vapor or vacuum automatic heating system. It may be used by itself to provide protection against high pressure or may be used in combination with the M-H Lo-Water Cutoff for Duplex switch operation.

CONTROL REQUIREMENTS FOR AIR CONDITIONING SYSTEMS INCLUDE



HUMIDITY CONTROL

This instrument has a human hair, hygroscopic element which will control, between predeter-mined limits, the rela-tive humidity in your home. The importance of proper humidity cannot be overestimated and can be had only through automatic control.



WATER VALVE - These solenoid valves take their control from the Humidity Controller and are especially designed for domestic application. They are extremely silent - sturdily built - and are so constructed that the seat and plunger may be easily removed for



MODUTROL MOTOR -The Modutrol Motor is used to automatically operate valves or dampers which in turn control the flow of steam, water, or air. These motors are built in severa types, both the two-position "on" and "off" type and the full modulating or proportioning type.

AUXILIARY AUTOMATIC CONTROLS YOU SHOULD CONSIDER



LO-WATER CUTOFF -This safety control constantly watches the water level in your boiler and shuts off your automatic burner whenever the water level becomes too low for safety. Com-bined with the Pressuretrol, as illustrated, it is known as an M-H Du-



WATER CIRCULATOR The M-H Packless Seal Circulator should be considered for all hot water heating plants. It makes possible smaller size piping throughout your home and will actually reduce fuel costs. This Circulator is precision built and scientifically lubricated.



FLOW VALVE-Flow Valves are used in conjunction with the M-H Packless Seal Circulator to provide a completely automatic summer-winter domestic hot water system. Without the circulator, M-H Motorized Flow Valves and a low limit control provide the same function.

DAMPER CONTROLS FOR HAND FIRED, COAL BURNING HEATING PLANTS



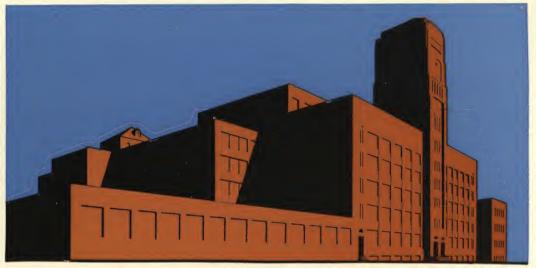
DAMPER MOTOR—This is the small but efficient, electrically operated damper motor supplied with the Electric Janitor Control Packages. It takes its Control from your room thermostat, which may be either the Chronotherm, Da-Nite Acratherm or the plain type Acratherm.

ELECTRIC JANITOR CONTROLS - For the hand-fired heating plant, automatic controls offer economy of operation as well as convenience. These controls are supplied in complete package outfits including the sturdy, fully electric, damper motor (illustrated) together with transformer and all necessary fittings. The room thermostat supplied may be either the Chronotherm (A), Da-Nite Acratherm (B) or the plain type Acratherm (C), all illustrated above. Don't be without Electric Janitor Automatic Controls even though you do not install an automatic burner. Automatic Controls are indispensable in any home, regardless of the type of heating equipment selected.

WHY MINNEAPOLIS-HONEYWELL

● Minneapolis-Honeywell is the oldest and largest manufacturer of automatic control equipment in the world. It has pioneered and developed every important contribution to this vast industry. Its products are backed by more than fifty years of actual field experience together with constant research and practical laboratory tests. Only Minneapolis-Honeywell can supply a complete Control System to meet every known requirement, be it a small or large home, a simple automatic heating job or a complete year 'round air conditioning installation. Branch offices are maintained in seventy principal cities to assure prompt service at all times. When you install Minneapolis-Honeywell Controls, you have definite assurance that your heating or air conditioning system will function at its best, both as regards performance and economical operation. Your heating or air conditioning Engineer and your Architect will heartily recommend and endorse Minneapolis-Honeywell Controls.





Minneapolis Plant where executive offices are located. Additional plants in Philadelphia, Pa., Chicago, Ill. and Wabash, Ind.

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• Stocks of all the Minneapolis-Honeywell controls are constantly carried at our branch offices and distributors in order that we may most quickly fill your needs. A telephone call will bring prompt delivery.

*Indicates Factory Branches.

Due to highly specialized requirements for Brown Instruments, they cannot be carried in branch stocks. However, your orders, placed with these offices, will be promptly filled and shipped from the Brown plant.